

Green Bonds:

Financing Climate Solutions

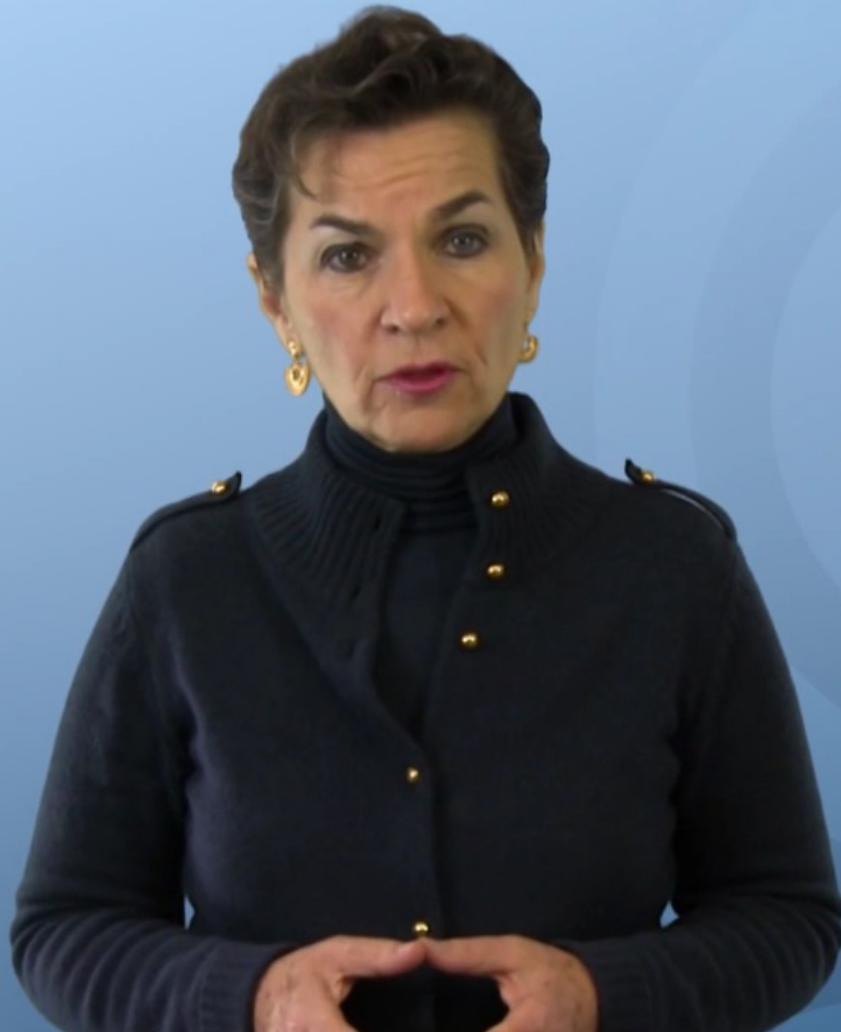
Chad Spitler

Michael Paparian

BCDC Financing the Future Workgroup

June 2, 2017

Why Green Finance?



“We need all financial products to be guided by climate considerations.”

*Christiana Figueres
Executive Secretary, COP21
February, 2016*



"Enormous opportunity exists to deploy green bond financing, to renew existing, aging urban infrastructure and also in emerging markets and economies that will be building new energy and urban networks in the coming years."

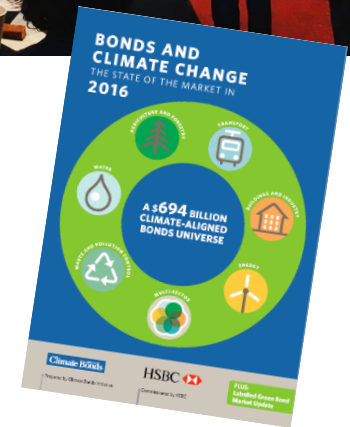
*Sean Kidney, CEO
Climate Bonds Initiative
at COP21, December, 2015*



The Climate Bonds Initiative

Investor-focused NGO mobilising debt capital markets for climate solutions

- Outreach to inform and stimulate the market
- Market data and analysis
- Standard & Certification Scheme
- Support for regulators





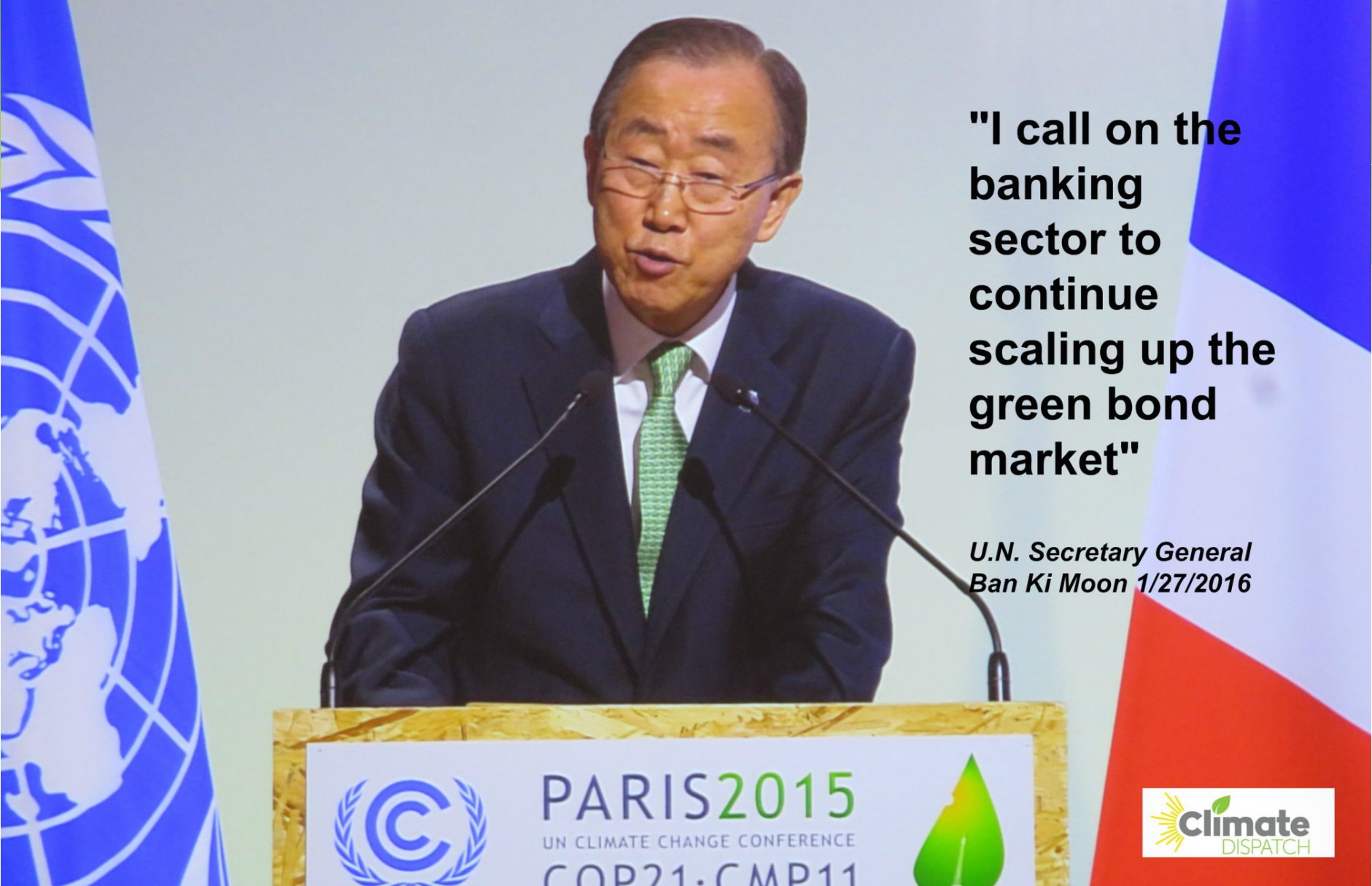
Bonds

A Quick Bond Primer

- * Bonds are a form of debt (as opposed to ownership/equity)
- * Bonds enable many investors to lend money for a project and get repaid
- * The Issuer/borrower agrees to pay back at an understood rate over a period of time
- * Bond doesn't represent ownership of business
- * Typically considered safer than equity
- * Transaction costs are more than conventional loan
- * Taxable vs. tax exempt



Green Bonds



**"I call on the
banking
sector to
continue
scaling up the
green bond
market"**

*U.N. Secretary General
Ban Ki Moon 1/27/2016*



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21.CMP11



What is a Green Bond?

Use of Proceeds

- * Clean energy including solar and wind installations
- * Energy-efficient buildings
- * Technologies to reduce GHG emissions
- * Clean transportation
- * Sustainable waste and water management
- * Sustainable forestry and agriculture
- * Protection against flooding, watershed management, wetlands restoration, biodiversity conservation
- * Infrastructure consistent with a climate-challenged world
- * Climate adaptation

What is a Green Bond?

Structural Components

- * Competitive pricing and coupon rates
- * USD benchmark size
- * Ring-fenced proceeds
- * Project transparency
- * Impact reporting
- * Third party verification

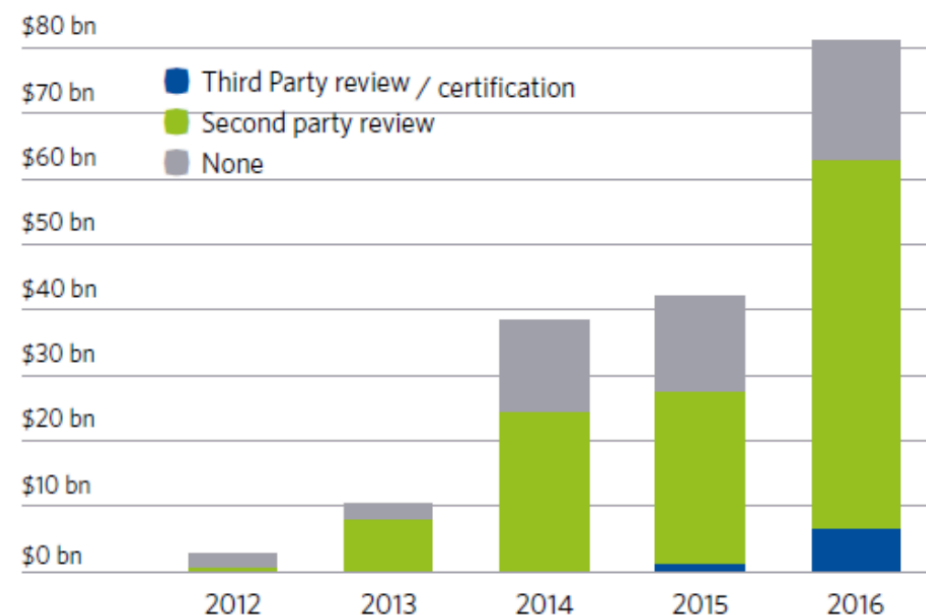
What is “Green” – External Review?

Majority have independent review

Green Bond Principles
create a basis

Climate Bonds Standard & Certification Scheme supports scalability and consistency via a standards-based approach

Overview of the share of external green bond certifications



Who Buys Green Bond? Fiduciaries

- * The worlds largest asset owners
 - * California Public Employees Retirement System (CalPERS)
 - * California State Teachers Retirement System (CalSTRS)
 - * California State Treasurers Office
 - * New York Common Retirement Funds
 - * TIAA
 - * AP2 (Sweden), FMO (Netherlands), Zurcher (Germany), etc.
- * The worlds largest asset managers and SRI funds
 - * BlackRock
 - * StateStreet
 - * Pax, Trillium, Calvert, etc.

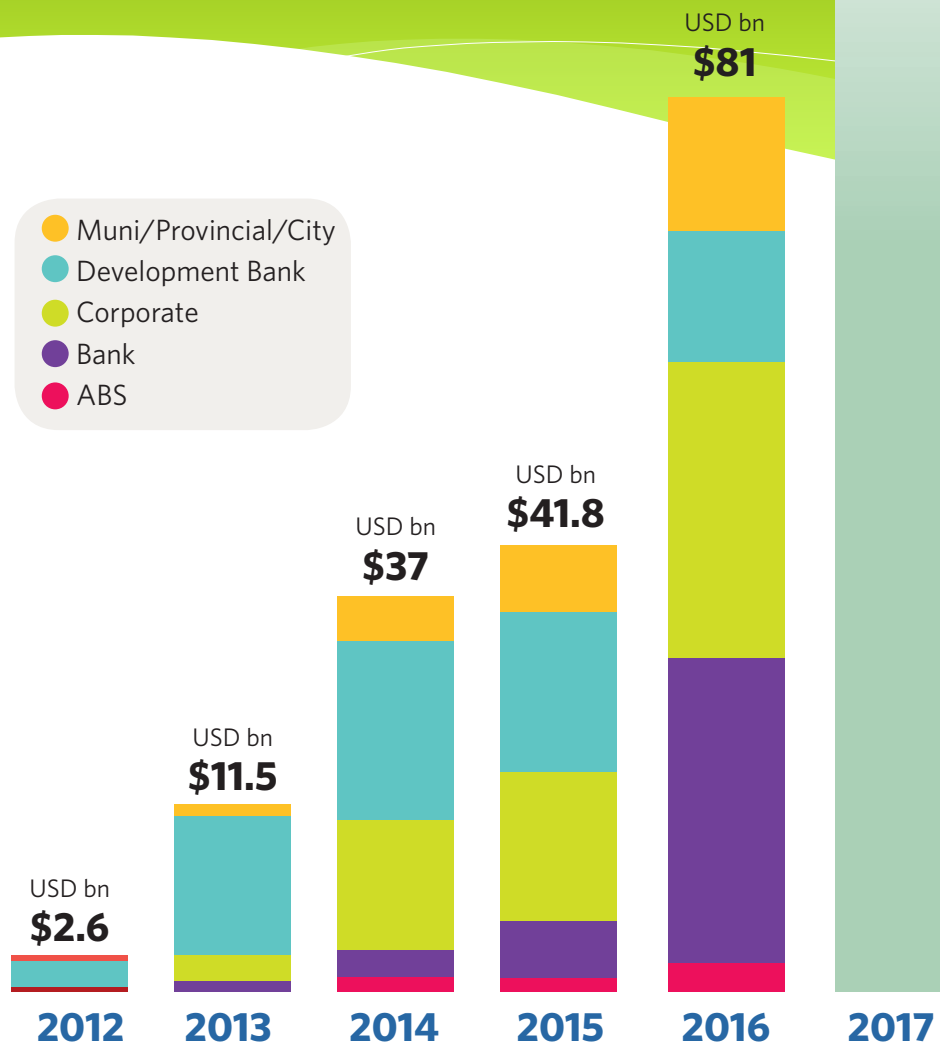
Why Issue Green Bonds?

- * To raise money for a project (not operations)
- * Investor diversification – access to new and different types of investors
- * Market positioning – they are popular
- * Pricing advantage – high demand increases what investors may be willing to pay

Why Invest in Green Bonds?

- * Client narrative – facilitates alignment of social and environmental values with investment program
- * You don't have to pay for the “green” – get your cake and eat it too
- * Identification and definition of green
- * An alternative to active engagement or divestment
- * Secondary market value

Green Bond Market Growing



Green Bonds:

Proceeds go to Green

Oversubscription in many cases

Comparable pricing

New and/or re-financing



Green Bond Global Reach

Netherlands \$14bn

Germany \$15bn

France \$19bn

Sweden \$6bn

Supra-nationals
= \$42bn

Canada \$3bn

USA \$35bn

Mexico \$2.6bn

China \$36bn

India \$3bn

- > \$10bn outstanding
 - \$1bn - 10bn outstanding
 - < \$1bn outstanding
- www.climatebonds.net

Climate Bonds INITIATIVE













































California Green Muni Bond Issuances

Issuer	Date*	Amount	General Purposes
State of California	10/7/2014	\$300,000,000	Mass Transit, Clean Water, Energy Efficiency
San Francisco Public Utilities Commission	5/20/2015	\$32,025,000	Renewable Energy
City of Los Angeles	6/4/2015	\$188,755,000	Wastewater, Digester, Water Purification
East Bay Municipal Utility District	6/17/2015	\$74,335,000	Clean Drinking Water, Conservation, Flood Protection, Renewable Energy, Biodiversity
City of Los Angeles	6/30/2015	\$100,835,000	Wastewater, Water Purification, Digester
San Diego Unified School District	1/5/2016	\$100,000,000	Energy Efficient Buildings, Renewable Energy
IBank	4/28/2016	\$410,735,000	Clean Water, Water Pollution Control
San Francisco Public Utilities Commission	5/24/2016	\$240,000,000	Clean water, wastewater
San Diego County Water Authority	6/23/2016	\$98,945,000	Water Efficiency
Midpeninsula Open Space District	9/22/2016	\$57,410,000	Open Space Acquisition, related
Port of Los Angeles	10/13/2016	\$35,205,000	Open space, habitat, green building
City of Napa	10/20/2016	\$12,500,000	Recycling and materials recovery facility
Los Angeles County Sanitation District	11/16/2016	\$170,265,000	Reclaimed water projects, sewage system Improvements

Issuer	Date*	Amount	General Purposes
San Francisco Public Utilities Commission	12/14/2016	\$259,350,000	Clean water projects (Climate Bond Certified)
IBank	3/23/2017	\$450,000,000	Clean Water, Water Pollution Control
California Health Facilities Financing Authority	5/3/2017	\$408,390,000	for Kaiser Hospital** System green buildings
City of Los Angeles (Taxable and tax-exempt)	5/24/2017	\$450,150,000	Sewage system upgrades
Bay Area Rapid Transit (BART) (taxable and tax-exempt)	6/1/2017	\$384,735,000	Rapid Transit (Climate Bond Certified)
California Pollution Control Financing Authority	Pending 6/14/2017	\$229,835,000	for CalAg manufacturing rice-straw to fiberboard plant
2014 Subtotal		\$300,000,000	
2015 Subtotal		\$395,950,000	
2016 Subtotal		\$1,384,410,000	
2017 Subtotal to (Mid-year)		\$1,923,110,000	
			* Dated per MSRB
			** companion taxable non-muni green bond for \$575 million also issued)
Total All Issuances		\$4,003,470,000	(prepared/updated by Michael Paparian May 30, 2017)

Green Bond/Climate Bond Standards

ENERGY	LOW CARBON BUILDINGS	INDUSTRY & ENERGY-INTENSIVE COMMERCIAL	WASTE & POLLUTION CONTROL	TRANSPORT	INFORMATION TECHNOLOGY & COMMUNICATIONS	NATURE BASED ASSETS	WATER
Solar 	Residential 	Manufacturing 	Recycling facilities 	Rail 	Power management 	Agricultural land 	Flood Defences 
Wind 	Commercial 	Energy efficiency processes 	Recycled products & circular economy 	Vehicles 	Broadband 	Forests (managed and unmanaged) 	Water distribution infrastructure 
Geothermal 	Retrofit 	Energy efficiency products 	Waste to energy 	Mass transit 	Resource efficiency 	Wetlands 	Water capture & storage infrastructure 
Hydro, marine 	Products for building carbon efficiency	Retail and wholesale 	Methane management 	Bus rapid transport 	Teleconferencing 	Degraded Lands 	Water treatment plants 
Bioenergy 		Data centres 	Geosequestration 	Water-borne transport 		Other land uses (managed and unmanaged) 	Assets in energy & production industries 
Gas, flaring		Process & fugitive emissions 		Alternative fuel Infrastructure		Fisheries and aquaculture 	
Energy distribution & management		Energy efficient appliances 				Coastal infrastructure 	
Dedicated transmission		Combined heat & power 					

Certification Criteria approved 

Criteria under development 

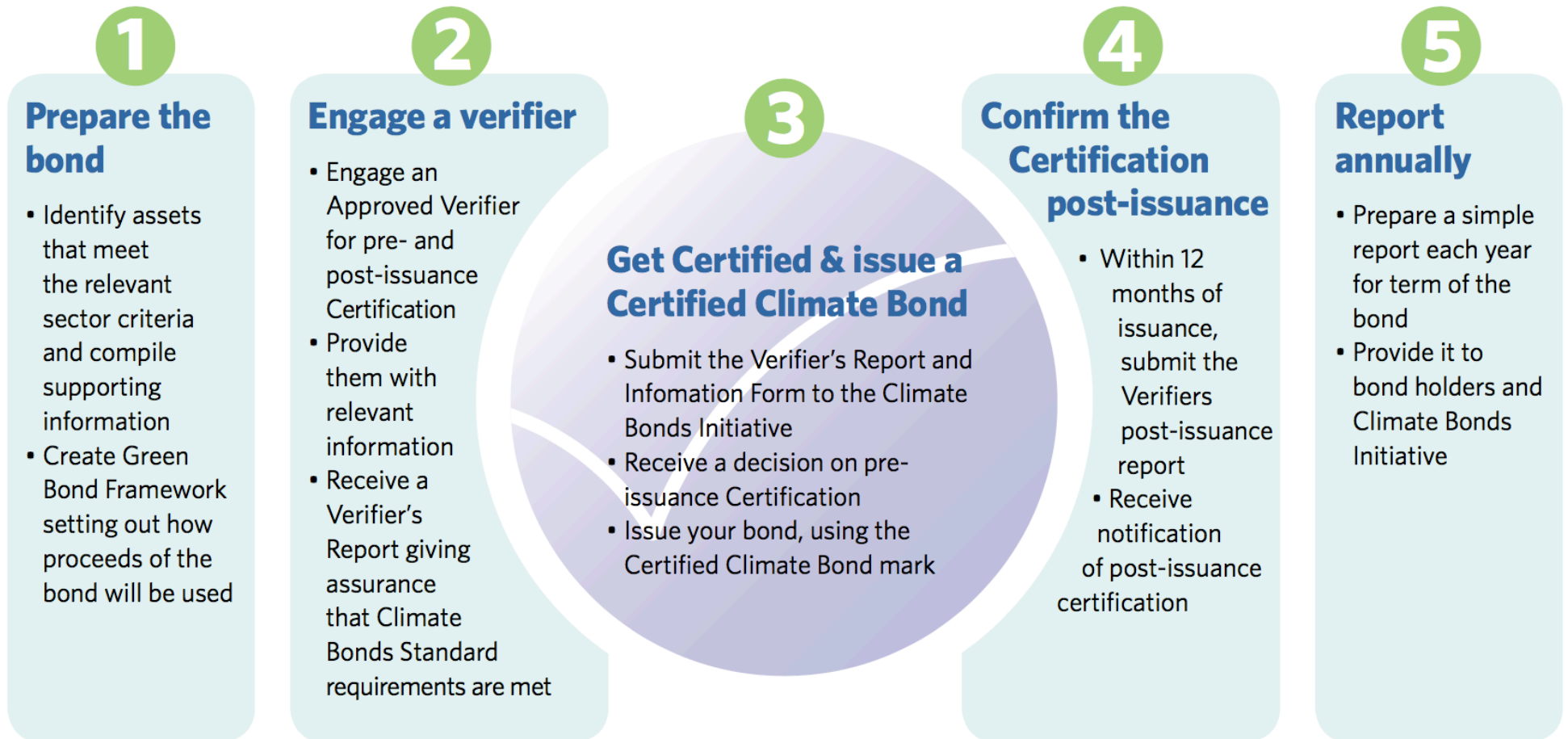
Due to commence 



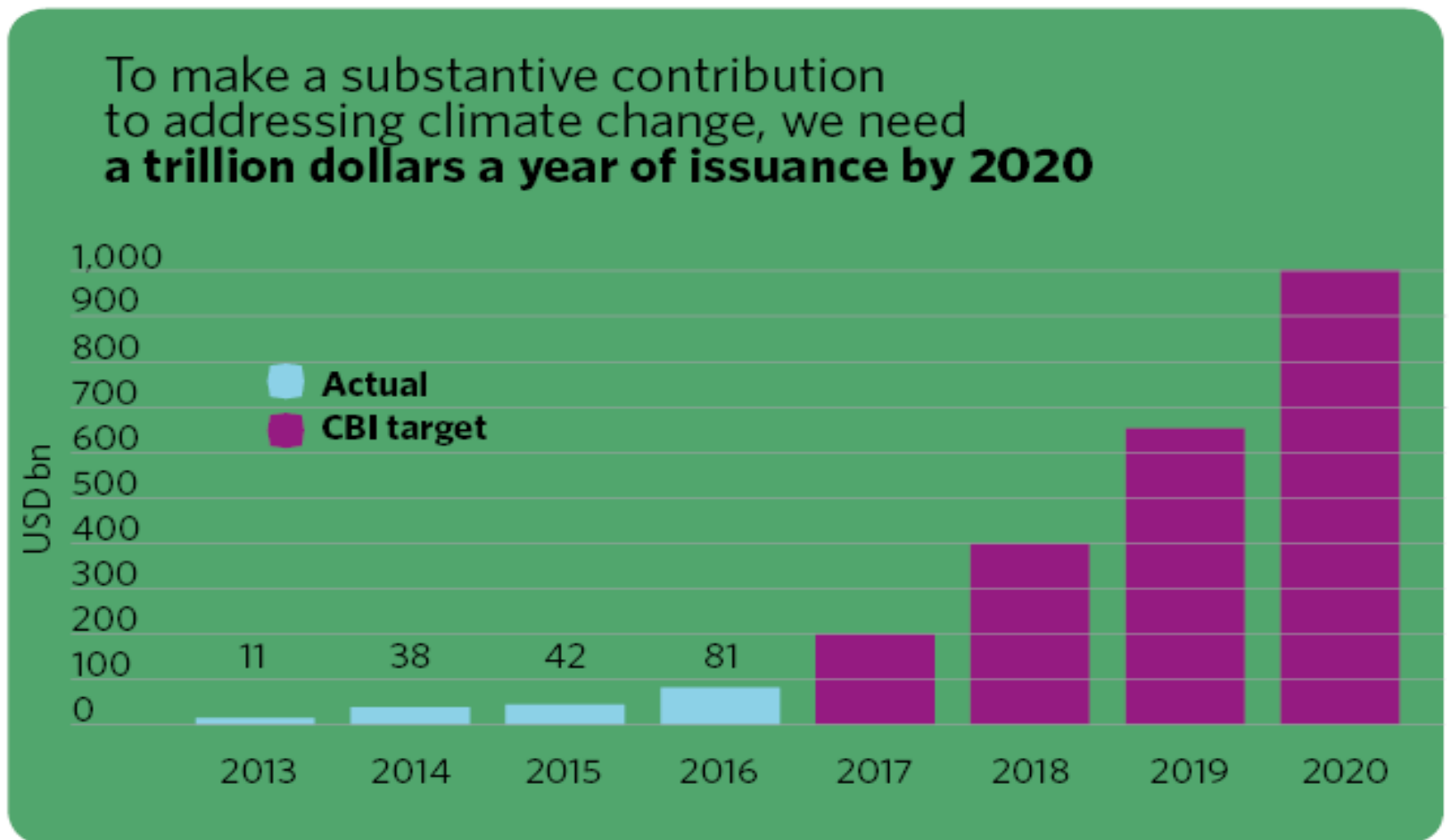
Climate
Bond
Certified



Climate Bonds Standard Certification Scheme



\$Trillion Needed Globally



Do we need \$35 Billion locally?

We have demand for Green Bonds

**Karsten Loeffler
Allianz at Green Bond
Workshop, Paris
December 2015**



Opportunities

- * Corporate, state and local green bond issuances
- * Partner with national/international entities to promote green bonds
- * Assist with issuances
- * Review infrastructure investments for consistency with climate needs & green bond standards
- * Integrate finance and climate policy/regulatory work
 - * E.g. work with other states, Mexico, etc.
- * Develop a Bay Area green investment fund

Selected Resources

- * Climate Bonds Initiative: Reports, standards, etc. <http://climatebonds.net>
- * Treasurer Chiang Green Bond Report: “Growing the U.S. Green Bond Market” <http://treasurer.ca.gov/greenbonds/publications/reports/1.pdf>
- * World Bank Report: “What are Green Bonds”
http://treasury.worldbank.org/cmd/pdf/What_are_Green_Bonds.pdf
- * UNEP paper - “Shades of Green & Environmental Risks”
http://unepinquiry.org/wp-content/uploads/2016/09/12_Green_Bonds_Certification_Shades_of_Green_and_Environmental_Risks.pdf
- * Green Bond Principles: <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/>

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Financing Climate Solutions

END